

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT EXAMINING OPERATION

First Named Inventor: Glen H. ERIKSON et al.

Serial No: 09/664,827

Group Art Unit: 1637

Filed: September 19, 2000

Examiner: S. Chunduru

Att. Docket No.: E1047/20044

Confirmation No.: 4947

For: QUADRUPLEX DNA AND DUPLEX PROBE SYSTEMS

REQUEST FOR RECONSIDERATION

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

INTRODUCTORY COMMENTS

In response to the Office Action dated June 15, 2004, the time for response thereto being extended in accordance with a Petition for Extension of Time submitted herewith, favorable reconsideration is respectfully requested in view of the following remarks.

Claims 1, 3-10 and 12-51 are pending, with claims 26-49 having been withdrawn from consideration pursuant to a restriction requirement.

Claims 1, 3-4, 6-10, 12-14 and 19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by J. Mol. Graphics, Vol. 7, pp. 218-232, 1989 (McGavin). This rejection is respectfully traversed.

As suggested by the title of McGavin, "A computer graphics study of multistranded DNA models," McGavin discloses theoretical, computer-based models for multiplex nucleic acid sequences. McGavin does not disclose or suggest how the virtual structures depicted by the computer models could be prepared using real nucleic acids. McGavin reveals nothing regarding

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hybridization conditions, such as temperature, time, hybridization medium, hybridization promoters, etc. As noted in the attached Rule 132 Declaration of Dr. Jasmine I. Daksis:

[A] person of ordinary skill in the art at the time of the invention would have been unable to apply the teachings of McGavin to produce physical structures corresponding to the virtual structures depicted by McGavin.

Thus, McGavin is improperly applied non-enabling prior art. In *Elan Pharmaceuticals, Inc. v. Mayo Foundation for Medical Education & Research*, 304 F.3d 1221, 1227 (Fed. Cir. 2002), the court held:

The disclosure in an assertedly anticipating reference must be adequate to enable possession of the desired subject matter. It is insufficient to name or describe the desired subject matter, if it cannot be produced without undue experimentation.

See also *In re Donohue*, 766 F.2d 531, 533, 226 USPQ 619, 621 (Fed. Cir. 1985) ("It is well settled that prior art under 35 U.S.C. §102(b) must sufficiently describe the claimed invention to have placed the public in possession of it. Such possession is effected if one of ordinary skill in the art could have combined the publication's description of the invention with his own knowledge to make the claimed invention. Accordingly, even if the claimed invention is disclosed in a printed publication, that disclosure will not suffice as prior art if it is not enabling.").

The Office Action makes no attempt to show that the theoretical structural models of McGavin would have enabled one of ordinary skill in the art to prepare the multiplex structure of claims 1, 3-4, 6-10, 12-14 and 19 without undue experimentation. Thus, the Office Action fails to make a *prima facie* case of anticipation.

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Moreover, the attached Rule 132 Declaration is sufficient to rebut any presumption that McGavin is enabling.

The Office Action at paragraph 4 cites MPEP § 2121.04 as supporting art-related rejections based on pictures. However, even the cited passage of the MPEP cautions that "the picture must show all the claimed structural features *and how they are put together.*" [Emphasis added.] While Applicants agree that pictures of a simple mechanical apparatus can inherently reveal how to assemble the apparatus, computer generated pictures depicting a virtual model of nucleic acid strands associated in an unprecedented fashion do not reveal anything about how to prompt nucleic acid strands to assemble in such a fashion. McGavin speculates as to how the nucleobases of multiplex structures might fit together, like pieces of a jigsaw puzzle. Unlike a jigsaw puzzle, however, real world assembly of the multiplex "puzzle" is not simply a matter of snapping adjacent pieces of the puzzle into place.

The Office Action at paragraph 4 asserts that Applicants' arguments are inconsistent with their previous citation of McGavin in response to the previously pending non-enablement rejection of the claims. Applicants respectfully disagree. A brief review of the prosecution history related to this issue will be helpful in understanding why there is no inconsistency in Applicants' present and past positions.

Applicants in their February 3, 2003 Request for Reconsideration cited McGavin (and several other related McGavin references) as only one of several factors suggesting the reasonable credibility of the invention. Applicants never said that McGavin provides even the slightest suggestion regarding how to make a real chemical compound corresponding to the

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computer models disclosed therein. McGavin was simply cited to provide space filling model evidence supporting the *reasonable credibility* of W-C base bonding involving more than two strands, as requested by the Examiners. See February 3, 2003 Request for Reconsideration at the paragraph bridging pages 4-5, stating that McGavin's "quantitative calculations suggesting the thermodynamic favorability of four-stranded Watson-Crick complexes lend further credence to the existence of such complexes and the invention claimed by Applicants."

McGavin was only one aspect of Applicants' response to the non-enablement and lack of utility rejections. The present invention is enabled by the specification, which includes working examples suggesting the formation of the claimed multiplexes, and McGavin provides additional evidence supporting the reasonable credibility of such multiplexes.

In summary, the Examiner previously asserted that the multiplex structures of the invention were theoretically impossible, and Applicants, *inter alia*, cited McGavin as evidence that multiplex structures were theoretically possible. Referring back to the jigsaw puzzle analogy first mentioned above, the Examiner doubted whether the puzzle pieces could fit together. McGavin was cited as evidence that the puzzle pieces could be arranged in a manner consistent with the claimed invention, without ever asserting that assembly of the multiplex "puzzle" is simply a matter of snapping adjacent pieces of the puzzle into place. Applicants disclose and claim means for assembling the real world counterpart to the virtual puzzle.

Accordingly, reconsideration and withdrawal of the anticipation rejection over McGavin are respectfully requested.

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Claims 5, 15-18, 20-25 and 50-51 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over McGavin in view of U.S. Patent No. 5,451,502 (George). This rejection is respectfully traversed.

McGavin fails to identically disclose all the limitations of dependent claims 5, 15-18, 20-25 and 50-51 for at least the same reasons (noted above) that it fails to identically disclose all the limitations of claims 1, 3-4, 6-10, 12-14 and 19. McGavin discloses theoretical, computer-based models for multiplex nucleic acid sequences based on Watson-Crick bonding, but does not disclose or suggest how the virtual structures described by the computer models could be prepared using real nucleic acids.

A reference relied upon to support an obviousness rejection must provide an enabling disclosure by placing the claimed invention in the possession of the public. See, e.g., *In re Payne*, 606 F.2d 303, 203 USPQ 245, 255 (CCPA 1979). “[I]f the prior art of record fails to disclose or render obvious a method for making a claimed compound, at the time the invention was made, it may not be legally concluded that the compound itself is in the possession of the public.” *In re Hoeksema*, 399 F.2d 269, 274 (CCPA 1968).

In *Hoeksema*, the court held that the examiner had made a *prima facie* case of obviousness by citing a reference disclosing a compound analogous to the claimed compound and a method for making the analogous compound. Applicants in *Hoeksema* submitted an affidavit showing that the claimed compound could not be made by the process disclosed in the applied reference. The court held that the affidavit overcame the *prima facie* showing by

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showing that the applied reference was not enabling.

In contrast to the applied reference of *Hoeksema*, McGavin does not disclose any process for preparing any chemical compound. As noted above, McGavin discloses theoretical, computer-based models for multiplex nucleic acid sequences based on Watson-Crick bonding, but does not disclose or suggest how to prepare real complexes of nucleic acids corresponding to the virtual models.

Moreover, identifying the chemical formula of a compound that fits within conventional rules of chemistry, as in *Hoeksema*, is far different from building virtual models of multiplex nucleic acids that contravene conventional rules of nucleic acid assembly at the time of the invention, as in McGavin. It is unreasonable to presume that a method for preparing the latter exists from a wholly theoretical reference.

In any event, the attached Rule 132 Declaration is sufficient to rebut any presumption that McGavin is enabling, as in *Hoeksema*.

George teaches a method for creating conventional Watson-Crick double-stranded nucleic acid multiplex structures. Regardless of whether the Examiner is correct that George teaches the features listed in the Office Action at pages 6-7, the features are all associated with conventional Watson-Crick duplex DNA and do not remedy the aforementioned failure of McGavin to disclose or suggest means for preparing real complexes of nucleic acids corresponding to the virtual models.

Accordingly, reconsideration and withdrawal of the obviousness rejection over McGavin in view of George are respectfully requested.

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For at least the reasons set forth above, it is respectfully submitted that the above-identified application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are respectfully requested.

Should the Examiner believe that anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

CAESAR, RIVISE, BERNSTEIN,
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By



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October 12, 2004

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